

DRAFT

**STRUCTURAL COMPONENT
CONSTRUCTION COST ESTIMATES
30% DESIGN LEVEL**

for the

**San Francisco-Oakland Bay Bridge
East Span Seismic Safety Project**

Contract No. 59A0040

Bridge No. 34-0006

Prepared for the

**State of California
Business, Transportation and
Housing Agency**

Submitted by



San Francisco, California

May 18, 1998

TABLE OF CONTENTS

Cost Estimate Summary

Cost Estimate Summary Sheet

General Plan Estimates

Mainspan Alternatives -Cable Stayed

- A-1.1 Cable Stayed Main Span, Dual Concrete Towers, Steel Box Deck
- A-1.2 Cable Stayed Main Span, Single Concrete Tower, Steel Box Deck
- A-1.3a Cable Stayed Main Span, Dual Concrete Tower, 4.5 Meter Concrete Box Deck
- A-1.3b Cable Stayed Main Span, Dual Concrete Tower, 6m Concrete Box Deck
- A-1.4 Cable Stayed Main Span, Single Concrete Tower, Steel/Concrete Composite Box Deck

Mainspan Alternatives -Suspension

- A-2.1 Suspension Main Span, Dual Steel Towers, Steel Box Deck
- A-2.1 - XL Suspension Main Span, Dual Steel Towers, Steel Box Deck– with Long Span
- A-2.2 Suspension Main Span, Single Steel Tower, Steel Box Deck
- A-2.2 - XL Suspension Main Span, Single Steel Tower, Steel Box Deck– with Long Span

Skyway Alternatives

- B HC-1 Skyway Structure, Haunched Concrete Superstructure
- B UC-2 Skyway Structure, Uniform Concrete Superstructure
- B US-3 Skyway Structure, Uniform Steel Superstructure
- B MAIN Main Span with Haunched Concrete Skyway Structure

Transition Structure Alternatives

- C-1 Transition Structure, 4.5m Concrete Box Deck
- C-2 Transition Structure, 6.0m Concrete Box Deck

Oakland Plaza Alternatives

- D-1 Oakland Plaza Approach Structure, Concrete Box Deck
- D-2 Oakland Plaza Approach Fill

YBI Detour Structure Alternatives

- E N/N YBI Detour Structure North/North, Temp Structure & Viaduct Modifications
- E N/S YBI Detour Structure North/South, Temp Structure & Viaduct Modifications
- E S/S YBI Detour Structure South/South, Temp Structure & Viaduct Modifications

Summary Estimates

Bikeway Alternatives

BK-1D	Bikeway with Single Lane Depressed
BK-1L	Bikeway with Single Lane Level
BK-2D	Bikeway with Two Lane Depressed
BK-2L	Bikeway with Two Lane Level

Aesthetic Lighting Alternatives

AL-1	Aesthetic Lighting, Cable Stayed Main Span
AL-2	Aesthetic Lighting, Suspension Main Span

Demolition

F-1,2,3	Demo less Demo Included in Viaduct Modifications
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Life Cycle Costs

All Alternatives

Cost Estimate Summary

Cost Estimate Summary Sheet

Cost Estimates

Mainspan Alternatives -Cable Stayed

A-1.1	Cable Stayed Main Span, Dual Concrete Towers, Steel Box Deck
A-1.2	Cable Stayed Main Span, Single Concrete Tower, Steel Box Deck
A-1.3a	Cable Stayed Main Span, Dual Concrete Tower, 4.5 Meter Concrete Box Deck
A-1.3b	Cable Stayed Main Span, Dual Concrete Tower, 6m Concrete Box Deck
A-1.4	Cable Stayed Main Span, Single Concrete Tower, Steel/Concrete Composite Box Deck

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span Seismic
Safety ProjectBR. No.: **34-0006**DISTRICT: **04****Main Span Segment - Dual Concrete Towers**CU: **04**RTE: **80**TYPE: **Cable Stayed - Orthotropic Steel Deck**EA: **01200K**CO: **ALA/SF**KP: **000000**LENGTH: **625.0 Meters**WIDTH: **48.0 Meters**AREA = **30000 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	126	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
7	STRUCTURAL CONCRETE, BRIDGE		m3	2,810	
8	BAR REINFORCING STEEL (BRIDGE)		kg	1,940,000	
Substructure: Tower Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	60,000	
2	CIDH CONC. PILING 3.0 M (W/PERM CASING)		m	1,820	
3	PRESTRESSING, FOOTING		LS	1	
4	PRESTRESSING, TOWER		LS	1	
5	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	11,300	
6	STRUCTURAL CONCRETE, BRIDGE		m3	14,400	
7	BAR REINFORCING STEEL		kg	2,720,000	
8	BAR REINFORCING STEEL (EPOXY COATED)		kg	5,616,000	
9	FURNISH/INSTALL STRUCTURAL STEEL, LINKS		kg	0	
10	FURNISH/INSTALL STRUCTURAL STEEL, LINER		kg	0	
11	FURNISH/INSTALL STRUCTURAL STEEL, DIAPHRAMS		kg	0	
12	MISCELLANEOUS METAL BRIDGE		kg	50,000	
Substructure: East Pier					
1	FURNISH CISS PILING 2.5M		m	1,730	
2	DRIVE CISS PILES 2.5M		EA	20	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,650	
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,410	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,900,000	
Superstructure					
1	STRUCTURAL CONCRETE, BRIDGE		m3	0	
2	FURNISH/INSTALL DECK OVERLAY		m2	31,200	
3	BEARING DEVICES		LS	1	
4	JOINT SEAL ASSEMBLY		m	100	
5	FURNISH STRUCTURAL STEEL		kg	18,290,000	
6	ERECT STRUCTURAL STEEL		kg	18,290,000	
7	FURNISH/ERECT CABLE STAYS		kg	720,000	
8	FURNISH/INSTALL HINGE UNITS		kg	60,000	
9	CLEAN & PAINT STRUCTURAL STEEL		LS	1	
10	MISCELLANEOUS METAL BRIDGE		kg	5,000	
11	BARRIER		m	2,500	
Misc.					
1	FENDER SYSTEM		LS	1	
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1	
3	NORTH SLOPE STABILIZATION		LS	1	
4	CONCRETE SEAL		LS	1	

COMMENTS:

SUBTOTAL

MOBILIZATION

\$20,965,667

SUBTOTAL BRIDGE ITEMS

\$209,656,667

CONTINGENCIES (@ 25%)

\$52,414,167

BRIDGE TOTAL COST

\$262,070,833

GRAND TOTAL

\$262,070,833

FOR BUDGET PURPOSES - SAY

\$262,071,000

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: RAF

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span Seismic
Safety ProjectBR. No.: 34-0006DISTRICT: 04Main Span Segment - Single Concrete TowersCU: 04RTE: 80TYPE: Cable Stayed - Orthotropic Steel DeckEA: 01200KCO: ALA/SFKP: 000000LENGTH: 625.0 MetersWIDTH: 48.0 MetersAREA = 30000 m sq

NUMBER OF STRUCTURES IN PROJECT :

EST. NO.

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QUANTITIES CHECKED BY :

DATE:

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	126	
6	PRESTRESSING		LS	1	
7	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
8	STRUCTURAL CONCRETE, BRIDGE		m3	2,000	
9	BAR REINFORCING STEEL (BRIDGE)		kg	1,530,000	
Substructure: Tower Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	30,000	
2	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	1,240	
3	PRESTRESSING, FOOTING		LS	1	
4	PRESTRESSING, TOWER		LS	1	
5	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,640	
6	STRUCTURAL CONCRETE, BRIDGE		m3	5,850	
7	BAR REINFORCING STEEL		kg	1,100,000	
8	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,817,000	
9	FURNISH/INSTALL STRUCTURAL STEEL, LINKS		kg	315,000	
10	FURNISH/INSTALL STRUCTURAL STEEL, LINER		kg	0	
11	FURNISH/INSTALL STRUCTURAL STEEL, DIAPHRAMS		kg	39,000	
12	MISCELLANEOUS METAL BRIDGE		kg	30,000	
Substructure: East Pier					
1	FURNISH CISS PILING 2.5M		m	1,730	
2	DRIVE CISS PILES 2.5M		EA	20	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,650	
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,410	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,900,000	
Superstructure					
1	FURNISH/INSTALL DECK OVERLAY		m2	31,200	
2	BEARING DEVICES		LS	1	
3	JOINT SEAL ASSEMBLY		m	100	
5	FURNISH STRUCTURAL STEEL		kg	19,540,000	
6	ERECT STRUCTURAL STEEL		kg	19,540,000	
7	FURNISH/ERECT CABLE STAYS		kg	1,036,000	
8	FURNISH/INSTALL HINGE UNITS		kg	60,000	
9	CLEAN & PAINT STRUCTURAL STEEL		LS	1	
10	MISCELLANEOUS METAL BRIDGE		kg	5,000	
11	BARRIER		m	2,500	
Misc.					
1	FENDER SYSTEM		LS	1	
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1	
3	NORTH SLOPE STABILIZATION		LS	1	
4	CONCRETE SEAL		LS	1	

COMMENTS:

SUBTOTAL	\$165,842,600
MOBILIZATION	\$18,426,956
SUBTOTAL BRIDGE ITEMS	\$184,269,556
CONTINGENCIES (@ 25%)	\$46,067,389
BRIDGE TOTAL COST	\$230,336,944
GRAND TOTAL	\$230,336,944
FOR BUDGET PURPOSES - SAY	\$230,337,000

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: **San Francisco - Oakland Bay Bridge East Span Seismic
Safety Project**BR. No.: **34-0006**DISTRICT: **04****Main Span Segment - Dual Concrete Towers**CU: **04**RTE: **80**TYPE: **Cable Stayed - 4.5m Concrete Deck**EA: **01200K**CO: **ALA/SF**KP: **000000**LENGTH: **625.0 Meters**WIDTH: **48.0 Meters**AREA = **30000 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	126	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
7	STRUCTURAL CONCRETE, BRIDGE		m3	2,808	
8	BAR REINFORCING STEEL (BRIDGE)		kg	1,940,000	
Substructure: Tower Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	60,000	
2	CIDH CONC. PILING 3 M (W/PERM CASING)		m	2,125	
3	PRESTRESSING, FOOTING		LS	1	
4	PRESTRESSING, TOWER		LS	1	
5	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	11,300	
6	STRUCTURAL CONCRETE, BRIDGE		m3	17,600	
7	BAR REINFORCING STEEL		kg	3,310,000	
8	BAR REINFORCING STEEL (EPOXY COATED)		kg	6,237,000	
9	FURNISH/INSTALL STRUCTURAL STEEL, LINKS		kg	0	
10	FURNISH/INSTALL STRUCTURAL STEEL, LINER		kg	0	
11	FURNISH/INSTALL STRUCTURAL STEEL, DIAPHRAMS		kg	0	
12	MISCELLANEOUS METAL BRIDGE		kg	50,000	
Substructure: East Pier					
1	FURNISH CISS PILING 2.5M		m	1,730	
2	DRIVE CISS PILES 2.5M		EA	20	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,650	
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,410	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,900,000	
Superstructure					
1	PRESTRESSING	525,000	LS	1	
2	STRUCTURAL CONCRETE, BRIDGE		m3	32,400	
3	FURNISH/INSTALL DECK OVERLAY		m2	31,200	
4	BEARING DEVICES		LS	1	
5	JOINT SEAL ASSEMBLY		m	100	
6	BAR REINFORCING STEEL		kg	4,820,000	
7	FURNISH/ERECT CABLE STAYS		kg	1,690,000	
8	FURNISH/INSTALL HINGE UNITS		kg	60,000	
9	MISCELLANEOUS METAL BRIDGE		kg	5,000	
10	BARRIER		m	2,500	
Misc.					
1	FENDER SYSTEM		LS	1	
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1	
3	NORTH SLOPE STABILIZATION		LS	1	
4	CONCRETE SEAL		LS	1	

COMMENTS: _____

SUBTOTAL	\$173,464,700
MOBILIZATION	\$19,273,856
SUBTOTAL BRIDGE ITEMS	\$192,738,556
CONTINGENCIES (@ 25%)	\$48,184,639
BRIDGE TOTAL COST	\$240,923,194
GRAND TOTAL	\$240,923,194
FOR BUDGET PURPOSES - SAY	\$240,923,000

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: RAF

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span Seismic Safety ProjectBR. No.: 34-0006DISTRICT: 04Main Span Segment - Dual Concrete TowersCU: 04RTE: 80TYPE: Cable Stayed - 6m Concrete DeckEA: 01200KCO: ALA/SFKP: 000000LENGTH: 625.0 MetersWIDTH: 48.0 MetersAREA = 30000 m sq

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY:

DATE: _____

QUANTITIES CHECKED BY:

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	126	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
7	STRUCTURAL CONCRETE, BRIDGE		m3	2,808	
8	BAR REINFORCING STEEL (BRIDGE)		kg	1,940,000	
Substructure: Tower Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	60,000	
2	CIDH CONC. PILING 3 M (W/PERM CASING)		m	2,125	
3	PRESTRESSING, FOOTING		LS	1	
4	PRESTRESSING, TOWER		LS	1	
5	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	11,300	
6	STRUCTURAL CONCRETE, BRIDGE		m3	17,600	
7	BAR REINFORCING STEEL		kg	3,310,000	
8	BAR REINFORCING STEEL (EPOXY COATED)		kg	6,237,000	
9	FURNISH/INSTALL STRUCTURAL STEEL, LINKS		kg	0	
10	FURNISH/INSTALL STRUCTURAL STEEL, LINER		kg	0	
11	FURNISH/INSTALL STRUCTURAL STEEL, DIAPHRAMS		kg	0	
12	MISCELLANEOUS METAL BRIDGE		kg	50,000	
Substructure: East Pier					
1	FURNISH CISS PILING 2.5M		m	1,730	
2	DRIVE CISS PILES 2.5M		EA	20	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,650	
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,410	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,900,000	
Superstructure					
1	PRESTRESSING	525,000	LS	1	
2	STRUCTURAL CONCRETE, BRIDGE		m3	34,500	
3	FURNISH/INSTALL DECK OVERLAY		m2	31,200	
4	BEARING DEVICES		LS	1	
5	JOINT SEAL ASSEMBLY		m	100	
6	BAR REINFORCING STEEL		kg	4,820,000	
7	FURNISH/ERECT CABLE STAYS		kg	1,830,000	
8	FURNISH/INSTALL HINGE UNITS		kg	60,000	
9	MISCELLANEOUS METAL BRIDGE		kg	5,000	
10	BARRIER		m	2,500	
Misc.					
1	FENDER SYSTEM		LS	1	
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1	
3	NORTH SLOPE STABILIZATION		LS	1	
4	CONCRETE SEAL		LS	1	

COMMENTS:

SUBTOTAL	\$177,944,700
MOBILIZATION	\$19,771,633
SUBTOTAL BRIDGE ITEMS	\$197,716,333
CONTINGENCIES (@ 25%)	\$49,429,083
BRIDGE TOTAL COST	\$247,145,417
GRAND TOTAL	\$247,145,417
FOR BUDGET PURPOSES - SAY	\$247,145,000

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: RAF

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span
Seismic Safety ProjectBR. No.: 34-0006DISTRICT: 04Main Span Segment - Single Concrete TowerCU: 04RTE: 80TYPE: Cable Stayed - Steel/Concrete Composite DeckEA: 01200KCO: ALA/SFKP: 000000LENGTH: 625.0 MetersWIDTH: 48.0 MetersAREA = 30000 m sq

NUMBER OF STRUCTURES IN PROJECT: _____

EST. NO. _____

PRICES BY: _____

COST INDEX: _____

QUANTITIES BY: _____

DATE: _____

QUANTITIES CHECKED BY: _____

DATE: _____

CONTRACT ITEMS		TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier						
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000		
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000		
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000		
4	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	80		
5	ROCK SOCKETS		m	126		
6	PRESTRESSING	10,000 kg	LS	1		
7	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800		
8	STRUCTURAL CONCRETE, BRIDGE		m3	2,000		
9	BAR REINFORCING STEEL (BRIDGE)		kg	1,530,000		
Substructure: Tower Pier						
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	30,000		
2	CIDH CONC. PILING 3.0 M (W/PERM CASING)		m	1,375		
3	PRESTRESSING, FOOTING		LS	1		
4	PRESTRESSING, TOWER		LS	1		
5	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,640		
6	STRUCTURAL CONCRETE, BRIDGE		m3	5,850		
7	BAR REINFORCING STEEL		kg	1,100,000		
8	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,817,000		
9	FURNISH/INSTALL STRUCTURAL STEEL, LINKS		kg	315,000		
10	FURNISH/INSTALL STRUCTURAL STEEL, LINER		kg	0		
11	FURNISH/INSTALL STRUCTURAL STEEL, DIAPHRAMS		kg	39,000		
12	MISCELLANEOUS METAL BRIDGE		kg	30,000		
Substructure: East Pier						
1	FURNISH CISS PILING 2.5M		m	1,730		
2	DRIVE CISS PILES 2.5M		EA	20		
3	PRESTRESSING		LS	1		
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,650		
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,410		
6	BAR REINFORCING STEEL		kg	0		
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,900,000		
Superstructure						
1	PRESTRESSING	249,000	LS	1		
2	FURNISH PRECAST CONCRETE DECK PANELS		m3	9,530		
3	BAR REINFORCING STEEL		kg	715,000		
4	FURNISH STRUCTURAL STEEL		kg	13,100,000		
5	ERECT STRUCTURAL STEEL & PANELS		LS	1		
6	CLEAN & PAINT STRUCTURAL STEEL		LS	1		
7	FURNISH/ERECT CABLE STAYS		kg	1,036,000		
8	BEARING DEVICES		LS	1		
9	JOINT SEAL ASSEMBLY		m	100		
10	FURNISH/INSTALL DECK OVERLAY		m2	31,200		
11	BARRIER		m	2,500		
12	FURNISH/INSTALL HINGE UNITS		kg	60,000		
13	MISCELLANEOUS METAL BRIDGE		kg	5,000		
Misc.						
1	FENDER SYSTEM		LS	1		
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1		
3	NORTH SLOPE STABILIZATION		LS	1		
4	CONCRETE SEAL		LS	1		

COMMENTS:

SUBTOTAL	\$143,331,000
MOBILIZATION	\$15,925,667
SUBTOTAL BRIDGE ITEMS	\$159,256,667
CONTINGENCIES (@ 25%)	\$39,814,167
BRIDGE TOTAL COST	\$199,070,833
GRAND TOTAL	\$199,070,833
FOR BUDGET PURPOSES - SAY	\$199,071,000

COST PER SQ. METER \$6,636

5/17/98

Cost Estimates

Mainspan Alternatives -Suspension

- | | |
|------------|--------------------------------------------------------------------------|
| A-2.1 | Suspension Main Span, Dual Steel Towers, Steel Box Deck |
| A-2.1 - XL | Suspension Main Span, Dual Steel Towers, Steel Box Deck— with Long Span |
| A-2.2 | Suspension Main Span, Single Steel Tower, Steel Box Deck |
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Substructure: West Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	126	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
7	STRUCTURAL CONCRETE, BRIDGE		m3	1,520	
8	BAR REINFORCING STEEL (BRIDGE)		kg	1,320,000	
Substructure: Tower Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	60,000	
2	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	1,740	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	10,700	
5	STRUCTURAL CONCRETE, BRIDGE		m3	0	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	4,004,000	
8	FURNISH STRUCTURAL STEEL		kg	8,312,000	
9	ERECT STRUCTURAL STEEL		kg	8,312,000	
10	CLEAN AND PAINT STRUCTURAL STEEL		LS	1	
11	MISCELLANEOUS METAL		kg	50,000	
Substructure: East Pier					
1	FURNISH CISS PILING 2.5M		m	1,380	
2	DRIVE CISS PILES 2.5M		EA	16	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,340	
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,050	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,580,000	
Superstructure					
1	FURNISH/INSTALL DECK OVERLAY		m2	31200	
2	BEARING DEVICES		LS	1	
3	JOINT SEAL ASSEMBLY		m	100	
4	FURNISH STRUCTURAL STEEL		kg	19,010,000	
5	ERECT STRUCTURAL STEEL		kg	19,010,000	
6	FURNISH SUSPENSION CABLE ASSEMBLIES		kg	1,640,000	
7	ERECT SUSPENSION CABLE ASSEMBLIES		kg	1,640,000	
8	FURNISH SUSPENDER ASSEMBLIES		kg	219,000	
9	ERECT SUSPENDER ASSEMBLIES		kg	219,000	
10	CLEAN & PAINT STRUCTURAL STEEL		LS	1	
11	MISCELLANEOUS METAL BRIDGE		kg	5,000	
12	BARRIER		m	2,500	
Misc.					
1	FENDER SYSTEM		LS	1	
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1	
3	NORTH SLOPE STABILIZATION		LS	1	

COMMENTS:

SUBTOTAL	\$199,740,760
MOBILIZATION	\$22,193,418
SUBTOTAL BRIDGE ITEMS	\$221,934,178
CONTINGENCIES (@ 25%)	\$55,483,544
BRIDGE TOTAL COST	\$277,417,722
GRAND TOTAL	\$277,417,722
FOR BUDGET PURPOSES - SAY	\$277,418,000

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span Seismic
Safety ProjectBR. No.: **34-0006**DISTRICT: **04****Main Span Segment - Dual Steel Towers**CU: **04**RTE: **80**TYPE: **Extended Suspension Bridge - Steel Deck**EA: **01200K**CO: **ALA/SF**KP: **000000**LENGTH: **700.0 Meters**WIDTH: **48.0 Meters**AREA = **33600 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	126	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
7	STRUCTURAL CONCRETE, BRIDGE		m3	1,520	
8	BAR REINFORCING STEEL (BRIDGE)		kg	1,320,000	
Substructure: Tower Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	60,000	
2	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	1,910	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	10,700	
5	STRUCTURAL CONCRETE, BRIDGE		m3	0	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	4,004,000	
8	FURNISH STRUCTURAL STEEL		kg	8,312,000	
9	ERECT STRUCTURAL STEEL		kg	8,312,000	
10	CLEAN AND PAINT STRUCTURAL STEEL		LS	1	
11	MISCELLANEOUS METAL		kg	50,000	
Substructure: East Pier					
1	FURNISH CISS PILING 2.5M		m	1,520	
2	DRIVE CISS PILES 2.5M		EA	16	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,340	
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,050	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,580,000	
Superstructure					
1	FURNISH/INSTALL DECK OVERLAY		m2	35000	
2	BEARING DEVICES		LS	1	
3	JOINT SEAL ASSEMBLY		m	100	
4	FURNISH STRUCTURAL STEEL		kg	21,110,000	
5	ERECT STRUCTURAL STEEL		kg	21,110,000	
6	FURNISH SUSPENSION CABLE ASSEMBLIES		kg	3,270,000	
7	ERECT SUSPENSION CABLE ASSEMBLIES		kg	3,270,000	
8	FURNISH SUSPENDER ASSEMBLIES		kg	267,000	
9	ERECT SUSPENDER ASSEMBLIES		kg	267,000	
10	CLEAN & PAINT STRUCTURAL STEEL		LS	1	
11	MISCELLANEOUS METAL BRIDGE		kg	5,000	
12	BARRIER		m	2,590	
Misc.					
1	FENDER SYSTEM		LS	1	
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1	
3	NORTH SLOPE STABILIZATION		LS	1	
4	REDUCE SKYWAY COSTS		m	69	

COMMENTS:

SUBTOTAL	\$207,611,890
MOBILIZATION	\$23,067,988
SUBTOTAL BRIDGE ITEMS	\$230,679,878
CONTINGENCIES' (@ 25%)	\$57,669,969
BRIDGE TOTAL COST	\$288,349,847
GRAND TOTAL	\$288,349,847
FOR BUDGET PURPOSES - SAY	\$288,350,000

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: RAF

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span Seismic Safety ProjectBR. No.: 34-0006DISTRICT: 4Main Span Segment - Single Steel TowersCU: 04RTE: 80TYPE: Suspension Bridge - Steel DeckEA: 01200KCO: ALA/SFKP: 0LENGTH: 625.0 MetersWIDTH: 48.0 MetersAREA = 30000 m sq

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	126	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
7	STRUCTURAL CONCRETE, BRIDGE		m3	1,520	
8	BAR REINFORCING STEEL (BRIDGE)		kg	1,320,000	
Substructure: Tower Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	30,000	
2	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	1,240	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,590	
5	STRUCTURAL CONCRETE, BRIDGE		m3	0	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	1,850,000	
8	FURNISH STRUCTURAL STEEL		kg	5,510,000	
9	ERECT STRUCTURAL STEEL		kg	5,510,000	
10	CLEAN AND PAINT STRUCTURAL STEEL		LS	1	
11	MISCELLANEOUS METAL		kg	30,000	
Substructure: East Pier					
1	FURNISH CISS PILING 2.5M		m	1,380	
2	DRIVE CISS PILES 2.5M		EA	16	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,340	
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,050	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,580,000	
Superstructure					
1	FURNISH/INSTALL DECK OVERLAY		m2	31200	
2	BEARING DEVICES		LS	1	
3	JOINT SEAL ASSEMBLY		m	100	
4	FURNISH STRUCTURAL STEEL		kg	19,630,000	
5	ERECT STRUCTURAL STEEL		kg	19,630,000	
6	FURNISH SUSPENSION CABLE ASSEMBLIES		kg	1,820,000	
7	ERECT SUSPENSION CABLE ASSEMBLIES		kg	1,820,000	
8	FURNISH SUSPENDER ASSEMBLIES		kg	236,000	
9	ERECT SUSPENDER ASSEMBLIES		kg	236,000	
10	CLEAN & PAINT STRUCTURAL STEEL		LS	1	
11	MISCELLANEOUS METAL BRIDGE		kg	5,000	
12	BARRIER		m	2,500	
Misc.					
1	FENDER SYSTEM		LS	1	
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1	
3	NORTH SLOPE STABILIZATION		LS	1	

COMMENTS:

SUBTOTAL	\$179,726,900
MOBILIZATION	\$19,969,656
SUBTOTAL BRIDGE ITEMS	\$199,696,556
CONTINGENCIES (@ 25%)	\$49,924,139
BRIDGE TOTAL COST	\$249,620,694
GRAND TOTAL	\$249,620,694
FOR BUDGET PURPOSES - SAY	\$249,621,000

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: RAF

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span Seismic Safety ProjectBR. No.: 34-0006DISTRICT: 4Main Span Segment - Single Steel TowersCU: 04RTE: 80TYPE: Extended Suspension Bridge - Steel DeckEA: 01200KCO: ALA/SFKP: 0LENGTH: 700.0 MetersWIDTH: 48.0 MetersAREA = 33600 m sq

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	6,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	126	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
7	STRUCTURAL CONCRETE, BRIDGE		m3	1,520	
8	BAR REINFORCING STEEL (BRIDGE)		kg	1,320,000	
Substructure: Tower Pier					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	30,000	
2	CIDH CONC. PILING 2.5 M (W/PERM CASING)		m	1,360	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,590	
5	STRUCTURAL CONCRETE, BRIDGE		m3	0	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	1,850,000	
8	FURNISH STRUCTURAL STEEL		kg	5,510,000	
9	ERECT STRUCTURAL STEEL		kg	5,510,000	
10	CLEAN AND PAINT STRUCTURAL STEEL		LS	1	
11	MISCELLANEOUS METAL		kg	30,000	
Substructure: East Pier					
1	FURNISH CISS PILING 2.5M		m	1,520	
2	DRIVE CISS PILES 2.5M		EA	16	
3	PRESTRESSING, FOOTING		LS	1	
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	5,340	
5	STRUCTURAL CONCRETE, BRIDGE		m3	2,050	
6	BAR REINFORCING STEEL		kg	0	
7	BAR REINFORCING STEEL (EPOXY COATED)		kg	2,580,000	
Superstructure					
1	FURNISH/INSTALL DECK OVERLAY		m2	35000	
2	BEARING DEVICES		LS	1	
3	JOINT SEAL ASSEMBLY		m	100	
4	FURNISH STRUCTURAL STEEL		kg	21,820,000	
5	ERECT STRUCTURAL STEEL		kg	21,820,000	
6	FURNISH SUSPENSION CABLE ASSEMBLIES		kg	3,040,000	
7	ERECT SUSPENSION CABLE ASSEMBLIES		kg	3,040,000	
8	FURNISH SUSPENDER ASSEMBLIES		kg	270,000	
9	ERECT SUSPENDER ASSEMBLIES		kg	270,000	
10	CLEAN & PAINT STRUCTURAL STEEL		LS	1	
11	MISCELLANEOUS METAL BRIDGE		kg	5,000	
12	BARRIER		m	2,590	
Misc.					
1	FENDER SYSTEM		LS	1	
2	ELEVATOR (INC. MECH. & ELECT.)		LS	1	
3	NORTH SLOPE STABILIZATION		LS	1	
4	REDUCE SKYWAY COSTS		m	69	

COMMENTS: _____

SUBTOTAL	\$184,309,950
MOBILIZATION	\$20,478,883
SUBTOTAL BRIDGE ITEMS	\$204,788,833
CONTINGENCIES (@ 25%)	\$51,197,208
BRIDGE TOTAL COST	\$255,986,042
GRAND TOTAL	\$255,986,042
FOR BUDGET PURPOSES - SAY	\$255,986,000

Skyway Alternatives

B HC-1	Skyway Structure, Haunched Concrete Superstructure
B UC-2	Skyway Structure, Uniform Concrete Superstructure
B US-3	Skyway Structure, Uniform Steel Superstructure
B MAIN	Main Span with Haunched Concrete Skyway Structure

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: RAF

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span
Seismic Safety ProjectBR. No.: 34-0006DISTRICT: 04Skyway StructureCU: 04RTE: 80TYPE: Haunched Concrete Box GirderEA: 01200KCO: ALA/SF

KP: _____

LENGTH: 2400.0 MetersWIDTH: 48.0 MetersAREA = 115200 m sq

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
<i>Substructure: Foundations</i>					
1 FURNISH CISS CONC. PILING 2.5 M		m	13,430		
2 FURNISH CISS CONC. PILING 1.5 M		m	14,260		
3 DRIVE CISS CONC. PILING 2.5 M		EA	132		
4 DRIVE CISS CONC. PILING 1.5 M		EA	162		
5 PRESTRESSING	1,233,900	LS	1		
6 STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	45,700		
7 BAR REINFORCING STEEL (EPOXY COATED)		kg	8,230,000		
8 MISCELLANEOUS METAL BRIDGE, COLLAR		kg	716,000		
<i>Substructure: Piers</i>					
1 STRUCTURAL CONCRETE, BRIDGE		m3	19,500		
2 BAR REINFORCING STEEL (BRIDGE)		kg	1,190,000		
3 BAR REINFORCING STEEL (EPOXY COATED)		kg	3,580,000		
4 MISCELLANEOUS METAL BRIDGE		kg	65,000		
<i>Superstructure</i>					
1 PRESTRESSING, STRANDS	5,945,000	LS	1		
2 PRESTRESSING, RODS	104,000	LS	1		
3 STRUCTURAL CONCRETE, BRIDGE LOCATION 1		m3	21,900		
4 STRUCTURAL CONCRETE, BRIDGE LOCATION 2		m3	14,100		
5 STRUCTURAL CONCRETE, BRIDGE (LIGHTWEIGHT)		m3	74,000		
6 FURNISH/INSTALL DECK OVERLAY		m2	115,000		
7 BEARING DEVICE		EA	80		
8 JOINT SEAL ASSEMBLY		m	350		
9 BAR REINFORCING STEEL (BRIDGE)		kg	12,900,000		
10 FURNISH/ERECT STRUCTURAL STEEL (BRIDGE)		kg	640,000		
11 MISCELLANEOUS METAL BRIDGE		kg	60,000		
12 CONCRETE BARRIER		m	9,612		
<i>Other</i>					
1 FENDER SYTEMS		LS	1		
2 ADD GIRDER SPAN FROM HINGE		m	0		
3 TEMPORARY CONSTRUCTION ACCESS		LS	1		
4 CONCRETE SEAL		LS	1		

SUBTOTAL	\$406,420,500
MOBILIZATION (@ 10%)	\$45,157,833
SUBTOTAL BRIDGE ITEMS	\$451,578,333
FOUNDATION CONTINGENCIES @ 25%	\$60,029,750
STRUCTURE CONTINGENCIES @ 15%	\$31,041,533
BRIDGE TOTAL COST	\$542,649,616
FOR BUDGET PURPOSES - SAY	\$542,600,000

COMMENTS:

COST PER SQ. METER \$4,711

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: **San Francisco - Oakland Bay Bridge East Span**
Seismic Safety ProjectBR. No.: **34-0006**DISTRICT: **04****Skyway Structure**CU: **04**RTE: **80**TYPE: **Uniform Depth Concrete Girder**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **2400.0 Meters**WIDTH: **48.0 Meters**AREA = **115200 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
<i>Substructure: Foundations</i>					
1	FURNISH CISS CONC. PILING 2.5 M	m	17,000		
2	FURNISH CISS CONC. PILING 1.5 M	m	10,530		
3	DRIVE CISS CONC. PILING 2.5 M	EA	184		
4	DRIVE CISS CONC. PILING 1.5 M	EA	108		
5	PRESTRESSING	1,530,900 LS	1		
6	STRUCTURAL CONCRETE, BRIDGE FOOTING	m3	56,700		
7	BAR REINFORCING STEEL (EPOXY COATED)	kg	10,210,000		
8	MISCELLANEOUS METAL BRIDGE, COLLAR	kg	887,000		
<i>Substructure: Piers</i>					
1	STRUCTURAL CONCRETE, BRIDGE	m3	23,500		
2	BAR REINFORCING STEEL (BRIDGE)	kg	1,470,000		
3	BAR REINFORCING STEEL (EPOXY COATED)	kg	4,410,000		
4	MISCELLANEOUS METAL BRIDGE	kg	60,000		
<i>Superstructure</i>					
1	PRESTRESSING, STRANDS	5,238,000 LS	1		
2	PRESTRESSING, RODS	0 LS	0		
3	STRUCTURAL CONCRETE, BRIDGE	m3	18,000		
4	STRUCTURAL CONCRETE, BRIDGE (LIGHTWEIGHT)	m3	78,600		
5	FURNISH/INSTALL DECK OVERLAY	m2	115,000		
6	BEARING DEVICE	EA	100		
7	JOINT SEAL ASSEMBLY	m	350		
8	BAR REINFORCING STEEL (BRIDGE)	kg	12,200,000		
9	FURNISH/ERECT STRUCTURAL STEEL (BRIDGE)	kg	932,000		
10	MISCELLANEOUS METAL BRIDGE	kg	60,000		
11	CONCRETE BARRIER	m	9,508		
<i>Other</i>					
1	FENDER SYTEMS	LS	1		
2	ADD GIRDER SPAN FROM HINGE	m	13		
3	TEMPORARY CONSTRUCTION ACCESS	LS	1		
4	CONCRETE SEAL	LS	1		

SUBTOTAL	\$415,477,750
MOBILIZATION (@ 10%)	\$46,164,194
SUBTOTAL BRIDGE ITEMS	\$461,641,944
FOUNDATION CONTINGENCIES @ 25%	\$66,656,150
STRUCTURE CONTINGENCIES @ 15%	\$28,560,139
BRIDGE TOTAL COST	\$556,858,233
FOR BUDGET PURPOSES - SAY	\$556,900,000

COMMENTS:

COST PER SQ. METER

\$4,834

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: **San Francisco - Oakland Bay Bridge East Span**
Seismic Safety ProjectBR. No.: **34-0006**DISTRICT: **04**TYPE: **Skyway Structure**CU: **04**RTE: **80**TYPE: **Uniform Depth Steel Girder**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **2400.0 Meters**WIDTH: **48.0 Meters**AREA = **115200 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
<i>Substructure: Foundations</i>					
1 FURNISH CISS CONC. PILING 2.5 M		m	11,090		
2 FURNISH CISS CONC. PILING 1.5 M		m	8,910		
3 DRIVE CISS CONC. PILING 2.5 M		EA	120		
4 DRIVE CISS CONC. PILING 1.5 M		EA	90		
5 PRESTRESSING	1,050,300	LS	1		
6 STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	38,900		
7 BAR REINFORCING STEEL (EPOXY COATED)		kg	7,002,000		
8 MISCELLANEOUS METAL BRIDGE, COLLAR		kg	640,000		
<i>Substructure: Piers</i>					
1 STRUCTURAL CONCRETE, BRIDGE		m3	14,300		
2 BAR REINFORCING STEEL (BRIDGE)		kg	883,000		
3 BAR REINFORCING STEEL (EPOXY COATED)		kg	2,680,000		
4 MISCELLANEOUS METAL BRIDGE		kg	40,000		
<i>Superstructure</i>					
1 FURNISH/INSTALL DECK OVERLAY		m2	114,000		
2 BEARING DEVICE		EA	76		
3 JOINT SEAL ASSEMBLY		m	250		
4 FURNISH STRUCTURAL STEEL (BRIDGE)		kg	62,220,000		
5 ERECT STRUCTURAL STEEL (BRIDGE)		kg	62,220,000		
6 CLEAN & PAINT STRUCTURAL STEEL		LS	1		
7 MISCELLANEOUS METAL BRIDGE		kg	60,000		
8 HINGE ASSEMBLY		EA	10		
9 CONCRETE BARRIER		m	9,600		
<i>Other</i>					
1 FENDER SYTEMS		LS	1		
2 ADD GIRDER SPAN FROM HINGE		m	40		
3 TEMPORARY CONSTRUCTION ACCESS		LS	1		
4 CONCRETE SEAL		LS	1		

SUBTOTAL	\$442,608,100
MOBILIZATION (@ 10%)	\$49,178,678
SUBTOTAL BRIDGE ITEMS	\$491,786,778
FOUNDATION CONTINGENCIES @ 25%	\$46,499,063
STRUCTURE CONTINGENCIES @ 25%	\$75,218,165
BRIDGE TOTAL COST	\$613,504,005
FOR BUDGET PURPOSES - SAY	\$613,500,000

COMMENTS:

COST PER SQ. METER

\$5,326

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: **San Francisco - Oakland Bay Bridge East Span**
Seismic Safety ProjectBR. No.: **34-0006**DISTRICT: **04**TYPE: **Main Span with Skyway Structure**CU: **04**RTE: **80**TYPE: **Haunched Concrete Box Girder**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **625.0 Meters**WIDTH: **48.0 Meters**AREA = **30000 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Substructure: West Pier (W2)					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE X	m3	8,000	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	2,000	
3	STRUCTURE BACKFILL (BRIDGE)		m3	4,000	
4	CIDH CONC. PILING 2.5 M		m	80	
5	CIDH CONC. PILING 2.5 M (w/PERM CASING)		m	126	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,800	
7	STRUCTURAL CONCRETE, BRIDGE		m3	2,400	
8	BAR REINFORCING STEEL (BRIDGE)		kg	1,940,000	
Substructure: Foundations (W1,A15E1,E2)					
1	CIDH CONC. PILING 2.5M (w/PERM CASING)		m	592	
2	FURNISH CISS CONC. PILING 2.5 M		m	2,336	
3	DRIVE CISS CONC. PILING 2.5 M		EA	32	
4	PRESTRESSING	320000	LS	1	
5	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	12,800	
6	BAR REINFORCING STEEL (EPOXY COATED)		kg	4,864,000	
7	MISCELLANEOUS METAL BRIDGE, COLLAR		kg	186,160	
Substructure: Piers (W1,E1,E2)					
1	STRUCTURAL CONCRETE, BRIDGE		m3	7,140	
2	BAR REINFORCING STEEL (BRIDGE)		kg	437,000	
3	BAR REINFORCING STEEL (EPOXY COATED)		kg	1,310,000	
4	MISCELLANEOUS METAL BRIDGE		kg	150,000	
Superstructure					
1	PRESTRESSING		LS	1	
2	PRESTRESSING, RODS	57500	LS	1	
3	STRUCTURAL CONCRETE, BRIDGE		m3	3,700	
4	STRUCTURAL CONCRETE, BRIDGE (LIGHTWEIGHT)		m3	19,300	
5	FURNISH/INSTALL DECK OVERLAY		m2	29,900	
6	BEARING DEVICE		EA	6	
7	JOINT SEAL ASSEMBLY		m	50	
8	BAR REINFORCING STEEL (BRIDGE)		kg	3,360,000	
9	FURNISH/ERECT STRUCTURAL STEEL (BRIDGE)		kg	167,000	
10	MISCELLANEOUS METAL BRIDGE		kg	15,600	
11	CONCRETE BARRIER		m	2,500	
Other					
1	FENDER SYTEMS		LS	1	
2	NORTH SLOPE STABILIZATION		LS	1	
3	CONCRETE SEAL		LS	1	

COMMENTS:

SUBTOTAL	\$101,558,100
MOBILIZATION (@ 10%)	\$11,284,233
SUBTOTAL BRIDGE ITEMS	\$112,842,333
CONTINGENCIES (@ 25%)	\$28,210,583
BRIDGE TOTAL COST	\$141,052,917
FOR BUDGET PURPOSES - SAY	\$141,100,000

COST PER SQ. METER **\$4,702**

Transition Structure Alternatives

- C-1 Transition Structure, 4.5m Concrete Box Deck
- C-2 Transition Structure, 6.0m Concrete Box Deck

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: **San Francisco - Oakland Bay Bridge East Span**
Seismic Safety ProjectBR. No.: **34-0006**DISTRICT: **04**TYPE: **Transition Structure at YB Tunnel Component**CU: **04**RTE: **80**TYPE: **Concrete PT Box Girder - 4.5m**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **400.0 Meters**WIDTH: **48.0 Meters**AREA = **19200 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1 BRIDGE REMOVAL (CONCRETE)		m3	3,730		
2 STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	1,500		
3 STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	16,600		
4 STRUCTURE BACKFILL (BRIDGE)		m3	8,820		
5 CIDH CONC. PILING .46 m		m	36,200		
6 ROCK ANCHORS		m	8,350		
7 PRESTRESSING	903000	LS	1		
8 STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	9,830		
9 STRUCTURAL CONCRETE, BRIDGE		m3	23,900		
10 JOINT SEAL ASSEMBLY		m	250		
11 BAR REINFORCING STEEL (BRIDGE)		kg	4,360,000		
12 MISCELLANEOUS METAL BRIDGE		kg	0		
13 METAL RAILING		m	150		
14 BARRIER RAIL		m	1,600		

Other

COMMENTS:

SUBTOTAL	36,330,500
MOBILIZATION	4,036,722
SUBTOTAL BRIDGE ITEMS	40,367,222
CONTINGENCIES (@ 25%)	10,091,806
BRIDGE TOTAL COST	50,459,028
BRIDGE REMOVAL (CONTIN. INC.)	
GRAND TOTAL	50,459,028
FOR BUDGET PURPOSES - SAY	50,500,000

COST PER SQ. METER

\$2,628

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span
Seismic Safety ProjectBR. No.: **34-0006**DISTRICT: **04**TYPE: **Transition Structure at YB Tunnel Component**CU: **04**RTE: **80**TYPE: **Concrete PT Box Girder - 6.0m**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **400.0 Meters**WIDTH: **48.0 Meters**AREA = **19200 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1 BRIDGE REMOVAL (CONCRETE)		m3	3,730		
2 STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	1,500		
3 STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	19,000		
4 STRUCTURE BACKFILL (BRIDGE)		m3	9,940		
5 CIDH CONC. PILING .46 m		m	47,200		
6 ROCK ANCHORS		m	10,100		
7 PRESTRESSING	1173000	LS	1		
8 STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	9,830		
9 STRUCTURAL CONCRETE, BRIDGE		m3	25,200		
10 JOINT SEAL ASSEMBLY		m	250		
11 BAR REINFORCING STEEL (BRIDGE)		kg	4,810,000		
12 MISCELLANEOUS METAL BRIDGE		kg			
13 METAL RAILING		m	150		
14 BARRIER RAIL		m	1,600		

Other

COMMENTS:

COST PER SQ. METER

\$2,877

SUBTOTAL	39,773,250
MOBILIZATION	4,419,250
SUBTOTAL BRIDGE ITEMS	44,192,500
CONTINGENCIES (@ 25%)	11,048,125
BRIDGE TOTAL COST	55,240,625
BRIDGE REMOVAL (CONTIN. INC.)	
GRAND TOTAL	55,240,625
FOR BUDGET PURPOSES - SAY	55,200,000

Oakland Plaza Alternatives

- D-1 Oakland Plaza Approach Structure, Concrete Box Deck
- D-2 Oakland Plaza Approach Fill

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: **San Francisco - Oakland Bay Bridge East Span**
Seismic Safety ProjectBR. No.: **34-0006**DISTRICT: **04****Oakland Plaza Approach Segment**CU: **04**RTE: **80**TYPE: **West Approach Slab Structure**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **105, 231, 430 Meters**WIDTH: **25.0 Meters**AREA = **18384 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO.

PRICES BY :

COST INDEX:

QUANTITIES BY:

DATE:

QUANTITIES CHECKED BY:

DATE:

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
<i>Concrete Approach Box Structure</i>					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	0	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	825	
3	STRUCTURE BACKFILL (BRIDGE)		m3	580	
4	FURNISH PILING		m	9,110	
5	DRIVE PILES		EA	506	
6	PRESTRESSING	73000	LS	1	
7	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	1,850	
8	STRUCTURAL CONCRETE, BRIDGE		m3	15,500	
9	EXPANSION JOINT		m	0	
10	BAR REINFORCING STEEL (BRIDGE)		kg	3,060,000	
11	CONCRETE BARRIER		m	1,450	
<i>West Approach Slab on Piles</i>					
1	STRUCTURE BACKFILL (BRIDGE)		m3	400	
2	FURNISH PILING		m	5,617	
3	DRIVE PILES		EA	274	
4	STRUCTURAL CONCRETE, BRIDGE		m3	2,350	
5	EXPANSION JOINT		m	29	
6	BAR REINFORCING STEEL (BRIDGE)		kg	348,000	
7	WATERPROOFING		m2	5,500	
8	MISCELLANEOUS METAL BRIDGE		kg	0	
9	CONCRETE BARRIER		m	430	
<i>Other</i>					

COMMENTS:

SUBTOTAL	\$20,868,830
MOBILIZATION	\$2,318,759
SUBTOTAL BRIDGE ITEMS	\$23,187,589
CONTINGENCIES (@ 25%)	\$5,796,897
BRIDGE TOTAL COST	\$28,984,486
BRIDGE REMOVAL (CONTIN. INC.)	
GRAND TOTAL	\$28,984,486
FOR BUDGET PURPOSES - SAY	\$29,000,000

COST PER SQ. METER

\$1,577

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: **San Francisco - Oakland Bay Bridge East Span**
Seismic Safety ProjectBR. No.: **34-0006**DISTRICT: **04****Oakland Plaza Approach Segment**CU: **04**RTE: **80**TYPE: **West Approach Fill Structure**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **105, 231, 430 Meters**WIDTH: **25.0 Meters**AREA = **18384 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
<i>Concrete Approach Box Structure</i>					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D			
2	REMOVAL HAZARDOUS MATERIAL	TYPE H			
3	STRUCTURE BACKFILL (BRIDGE)				
4	FURNISH PILING				
5	DRIVE PILES				
6	PRESTRESSING	73000			
7	STRUCTURAL CONCRETE, BRIDGE FOOTING				
8	STRUCTURAL CONCRETE, BRIDGE				
9	EXPANSION JOINT				
10	BAR REINFORCING STEEL (BRIDGE)				
11	CONCRETE BARRIER				
<i>West Approach Fill</i>					
1	IMPORTED BORROW				
2	FILTER FABRIC				
3	WATERPROOFING				
4	CONCRETE BARRIER				
5	SLOPE PROTECTION				
6	PERMEABLE BASE				
7	SURCHARGE				
8	WICK DRAINS				
<i>Other</i>					

COMMENTS:

SUBTOTAL	\$25,111,260
MOBILIZATION	\$2,790,140
SUBTOTAL BRIDGE ITEMS	\$27,901,400
CONTINGENCIES (@ 25%)	\$6,975,350
BRIDGE TOTAL COST	\$34,876,750
BRIDGE REMOVAL (CONTIN. INC.)	
GRAND TOTAL	\$34,876,750
FOR BUDGET PURPOSES - SAY	\$34,900,000

COST PER SQ. METER

\$1,897

YBI Detour Structure Alternatives

- E N/N YBI Detour Structure North/North, Temp Structure & Viaduct Modifications
- E N/S YBI Detour Structure North/South, Temp Structure & Viaduct Modifications
- E S/S YBI Detour Structure South/South, Temp Structure & Viaduct Modifications

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: **San Francisco - Oakland Bay Bridge East Span
Seismic Safety Project**BR. No.: **34-0006**DISTRICT: **04****Detour Structural Component Estimate**CU: **04**RTE: **80**TYPE: **North-North Detour**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **400.0 Meters**WIDTH: **48.0 Meters**AREA = **19200 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY:

DATE: _____

QUANTITIES CHECKED BY:

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Detour Structure					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	0	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	4,900	
3	STRUCTURE BACKFILL (BRIDGE)		m3	2,250	
4	CIDH CONC. PILING .46 m		m	7,360	
5	ROCK ANCHORS		m	2,730	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,400	
7	STRUCTURAL CONCRETE, BRIDGE		m3	3,880	
8	EXPANSION JOINT		m	1,000	
9	BAR REINFORCING STEEL (BRIDGE)		kg	924,000	
10	FURNISH STRUCTURAL STEEL (BRIDGE)		kg	4,850,000	
11	ERECT STRUCTURAL STEEL (BRIDGE)		kg	4,850,000	
12	CLEAN & PAINT STRUCTURAL STEEL		LS	1	
13	METAL RAILING		m	1,930	
14	DETOUR TIE-IN		LS	1	
15	BRIDGE REMOVAL		LS	1	
Viaduct Modifications					
1	BRIDGE REMOVAL, CONCRETE		m3	920	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	840	
3	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	4,550	
4	STRUCTURE BACKFILL (BRIDGE)		m3	2,190	
5	PRESTRESSING	311511kg	LS	1	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	2,210	
7	STRUCTURAL CONCRETE, BRIDGE		m3	3,340	
8	STRUCTURAL CONCRETE, RETAINING WALL		m3	260	
9	BAR REINFORCING STEEL (BRIDGE)		kg	644,000	
10	BAR REINFORCING STEEL (RETAINING WALL)		kg	16,900	
11	CORE CONCRETE (1")		m	474	
12	CORE CONCRETE (1 1/2")		kg	474	
13	DRILL AND BOND DOWEL(EPOXY CARTRIDGE)		m	782	
14	CONCRETE BARRIER		m	333	
15	COLUMN CASING		kg	5,300	

Other

SUBTOTAL					\$35,244,688
MOBILIZATION					\$3,916,076
SUBTOTAL BRIDGE ITEMS					\$39,160,764
CONTINGENCIES (@ 25%)					\$9,790,191
BRIDGE TOTAL COST					\$48,950,956
BRIDGE REMOVAL (CONTIN. INC.)					
GRAND TOTAL					\$48,950,956
FOR BUDGET PURPOSES - SAY					\$49,000,000

COMMENTS:

COST PER SQ. METER

\$0

BRIDGE GENERAL PLAN ESTIMATE ☐OR PLANNING ESTIMATE ☐RCVD BY: **RAF**

IN EST: _____

OUT EST: _____

BRIDGE: San Francisco - Oakland Bay Bridge East Span
Seismic Safety ProjectBR. No.: **34-0006**DISTRICT: **04****Detour Structural Component Estimate**CU: **04**RTE: **80**TYPE: **North-South Detour**EA: **01200K**CO: **ALA/SF**

KP: _____

LENGTH: **400.0 Meters**WIDTH: **48.0 Meters**AREA = **19200 m sq**

NUMBER OF STRUCTURES IN PROJECT :

EST. NO. _____

PRICES BY :

COST INDEX: _____

QUANTITIES BY :

DATE: _____

QUANTITIES CHECKED BY :

DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
<i>Detour Structure</i>					
1	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	0	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	4,550	
3	STRUCTURE BACKFILL (BRIDGE)		m3	2,240	
4	CIDH CONC. PILING .46 m		m	5,850	
5	ROCK ANCHORS		m	2,880	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,260	
7	STRUCTURAL CONCRETE, BRIDGE		m3	3,440	
8	EXPANSION JOINT		m	800	
9	BAR REINFORCING STEEL (BRIDGE)		kg	842,000	
10	FURNISH STRUCTURAL STEEL (BRIDGE)		kg	4,560,000	
11	ERECT STRUCTURAL STEEL (BRIDGE)		kg	4,560,000	
12	CLEAN & PAINT STRUCTURAL STEEL		LS	1	
13	METAL RAILING		m	1,680	
14	DETOUR TIE-IN		LS	1	
15	BRIDGE REMOVAL		LS	1	
<i>Viaduct Modifications</i>					
1	BRIDGE REMOVAL, CONCRETE		m3	1,753	
2	STRUCTURE EXCAVATION (BRIDGE)	TYPE D	m3	1,540	
3	STRUCTURE EXCAVATION (BRIDGE)	TYPE H	m3	6,700	
4	STRUCTURE BACKFILL (BRIDGE)		m3	3,290	
5	PRESTRESSING	78954	LS	1	
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		m3	3,230	
7	STRUCTURAL CONCRETE, BRIDGE		m3	4,550	
8	STRUCTURAL CONCRETE, RETAINING WALL		m3	260	
9	BAR REINFORCING STEEL (BRIDGE)		kg	863,000	
10	BAR REINFORCING STEEL (RETAINING WALL)		kg	16,900	
11	CORE CONCRETE (1")		m	807	
12	CORE CONCRETE (1 1/2")		kg	807	
13	DRILL AND BOND DOWEL(EPOXY CARTRIDGE)		m	1,334	
14	CONCRETE BARRIER		m	0	
15	COLUMN CASING		kg	5,300	

Other

COMMENTS:

SUBTOTAL	\$34,861,784
MOBILIZATION	\$3,873,532
SUBTOTAL BRIDGE ITEMS	\$38,735,316
CONTINGENCIES (@ 25%)	\$9,683,829
BRIDGE TOTAL COST	\$48,419,144
BRIDGE REMOVAL (CONTIN. INC.)	
GRAND TOTAL	\$48,419,144
FOR BUDGET PURPOSES - SAY	\$48,400,000

COST PER SQ. METER

\$0

RCVD BY: **RAF**

IN EST:

OUT EST:

BRIDGE: San Francisco - Oakland Bay Bridge East Span
Seismic Safety Project

BR. No.: **34-0006**

DISTRICT: 04

Detour Structural Component Estimate

CU: 04

RTE: 80

TYPE: **South-South Detour**

EA: 01200K

CO: ALA/SF

KP:

LENGTH: 400.0 Meters

WIDTH: 48:0 Meters

AREA = 19200 m sq

NUMBER OF STRUCTURES IN PROJECT :

EST. NO.

PRICES BY :

COST INDEX:

QUANTITIES BY:

DATE:

QUANTITIES CHECKED BY:

DATE:

Other					

COMMENTS:

SUBTOTAL	\$31,932,338
MOBILIZATION	\$3,548,038
SUBTOTAL BRIDGE ITEMS	\$35,480,376
CONTINGENCIES (@ 25%)	\$8,870,094
BRIDGE TOTAL COST	\$44,350,469
BRIDGE REMOVAL (CONTIN. INC.)	
GRAND TOTAL	\$44,350,469
FOR BUDGET PURPOSES - SAY	\$44,400,000

COST PER SQ. METER

\$0

Bikeway Alternatives

BK-1D	Bikeway with Single Lane Depressed
BK-1L	Bikeway with Single Lane Level
BK-2D	Bikeway with Two Lane Depressed
BK-2L	Bikeway with Two Lane Level

STATE OF CALIFORNIA | DEPARTMENT OF TRANSPORTATION
MARGINAL ESTIMATE - MISCELLANEOUS STRUCTURES

STRUCTURE: - Oakland Bay RCVD BY: RAF IN EST: _____
 TYPE: Bikeway Addition BR. No.: 34-0006 DISTRICT: 04
Single Lane - Depressed from Roadway CU: 04 RTE: 80
 EA: 01200K CO: ALA/SF
 KP: _____

LENGTH: 3654.0 m
 WIDTH: 3.6 m
 AREA = 13154.4 m sq

NUMBER OF STRUCTURES IN PROJECT :	EST. NO.
PRICES BY :	COST INDEX:
QUANTITIES BY :	DATE:
QUANTITIES CHECKED BY :	DATE:

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Transition Structure 432.0 m					
1 CIDH PILES		m	570		
2 PRESTRESSING STEEL	173900	LS	1		
3 STRUCTURAL CONCRETE, BRIDGE		m3	1,290		
4 FURNISH/INSTALL DECK OVERLAY		m2	0		
5 JOINT SEAL ASSEMBLY		m	12		
6 BAR REINFORCING STEEL (BRIDGE)		kg	155,000		
7 MISCELLANEOUS METAL BRIDGE		kg	5,000		
8 SEPARATION RAILING		m	402		
9 BIKEWAY RAILING		m	402		
10 RAMP TRANSITION		m	30		

Mainspan & Cantilevers (Suspension w/Dual Towers) 625.0 m					
1 FURNISH/INSTALL DECK OVERLAY		m2	2,270		
2 JOINT SEAL ASSEMBLY		m	4		
2 FURNISH/ERECT STRUCTURAL STEEL		kg	234,000		
3 FURNISH/ERECT CABLE WIRE STEEL		kg	34,500		
4 CLEAN & PAINT STRUCTURAL STEEL		m2	4,500		
5 MISCELLANEOUS METAL BRIDGE		kg	6,480		
6 SEPARATION RAILING		m	630		
7 BIKEWAY RAILING		m	630		

Skyway (Assume Haunched Concrete Superstructure) 2400.0 m					
1 FURNISH PILES		m	600		
2 DRIVE PILES		EA	0		
3 PRESTRESSING, LONGITUDINAL	129,000	LS	1		
4 PRESTRESSING, TRANSVERSE	272460	LS	1		
5 STRUCTURAL CONCRETE, BRIDGE		m3	630		
6 STRUCTURAL CONCRETE, BRIDGE (Lightweight)		5310	5,310		
7 FURNISH/INSTALL DECK OVERLAY		m2	8,640		
8 BAR REINFORCING STEEL (BRIDGE)		kg	738,000		
9 JOINT SEAL ASSEMBLY		m	16		
10 MISCELLANEOUS METAL BRIDGE		kg	19,200		
11 SEPARATION RAILING		m	2,400		
12 BIKEWAY RAILING		m	2,400		

Oakland Plaza Structure 197.0 m					
1 FURNISH PILES		m	128		
2 DRIVE PILES		EA	8		
3 PRESTRESSING STEEL	44560	LS	1		
4 STRUCTURAL CONCRETE, BRIDGE		m3	210		
5 FURNISH/INSTALL DECK OVERLAY		m2	0		
5 JOINT SEAL ASSEMBLY		m	4		
6 BAR REINFORCING STEEL (BRIDGE)		kg	24,500		
7 MISCELLANEOUS METAL BRIDGE		kg	840		
8 SEPARATION RAILING		m	105		
9 BIKEWAY RAILING		m	105		
10 TRANSITION/ROADWAY		M	92		

Lighting					
BIKEWAY LIGHTING		LS	1		
BIKEWAY APURTENANCES		LS	1		

COMMENTS:

COST PER SQ. METER \$2,381

SUBTOTAL BRIDGE ITEMS	\$22,548,960
MOBILIZATION (@ 10%)	\$2,505,440
SUBTOTAL BRIDGE ITEMS	\$25,054,400
CONTINGENCIES (@ 25%)	\$6,263,600
BRIDGE TOTAL COST	\$31,318,000
GRAND TOTAL	\$31,318,000
FOR BUDGET PURPOSES - SAY	\$31,300,000

STATE OF CALIFORNIA | DEPARTMENT OF TRANSPORTATION
MARGINAL ESTIMATE - MISCELLANEOUS STRUCTURES

STRUCTURE: San Francisco- Oakland Bay Bridge RCVD BY: RAF IN EST:
Bikeway Addition BR. No.: 34-0006 OUT EST:
 TYPE: Single Lane - Level w/Roadway CU: 04 DISTRICT: 04
 EA: 01200K CO: ALA/SF
 KP:

LENGTH: 3654.0 m
 WIDTH: 3.6 m
 AREA = 13154.4 m sq

NUMBER OF STRUCTURES IN PROJECT :	EST. NO.
PRICES BY :	COST INDEX:
QUANTITIES BY:	DATE:
QUANTITIES CHECKED BY:	DATE:

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Transition Structure 432.0 m					
1	CIDH PILES	m	570		
2	PRESTRESSING STEEL	173900	LS	1	
3	STRUCTURAL CONCRETE, BRIDGE	m3	1,000		
4	FURNISH/INSTALL DECK OVERLAY	m2	0		
5	JOINT SEAL ASSEMBLY	m	12		
6	BAR REINFORCING STEEL (BRIDGE)	kg	120,000		
7	MISCELLANEOUS METAL BRIDGE	kg	5,000		
8	SEPARATION RAILING	m	402		
9	BIKEWAY RAILING	m	402		
10	RAMP TRANSITION	m	30		
Mainspan & Cantilevers (Suspension w/Dual Towers) 625.0 m					
1	FURNISH/INSTALL DECK OVERLAY	m2	2,270		
2	JOINT SEAL ASSEMBLY	m	4		
2	FURNISH/ERECT STRUCTURAL STEEL	kg	234,000		
3	FURNISH/ERECT CABLE WIRE STEEL	kg	34,500		
4	CLEAN & PAINT STRUCTURAL STEEL	m2	4,500		
5	MISCELLANEOUS METAL BRIDGE	kg	6,480		
6	SEPARATION RAILING	m	630		
7	BIKEWAY RAILING	m	630		
Skyway (Assume Haunched Concrete Superstructure) 2400.0 m					
1	FURNISH PILES	m	600		
2	DRIVE PILES	EA	0		
3	PRESTRESSING, LONGITUDINAL	129,000	LS	1	
4	PRESTRESSING, TRANSVERSE	272460	LS	1	
5	STRUCTURAL CONCRETE, BRIDGE	m3	806		
6	STRUCTURAL CONCRETE, BRIDGE (Lightweight)	5310	3,400		
7	FURNISH/INSTALL DECK OVERLAY	m2	8,640		
8	BAR REINFORCING STEEL (BRIDGE)	kg	510,000		
9	JOINT SEAL ASSEMBLY	m	16		
10	MISCELLANEOUS METAL BRIDGE	kg	19,200		
11	SEPARATION RAILING	m	2,400		
12	BIKEWAY RAILING	m	2,400		
Oakland Plaza Structure 197.0 m					
1	FURNISH PILES	m	128		
2	DRIVE PILES	EA	8		
3	PRESTRESSING STEEL	44560	LS	1	
4	STRUCTURAL CONCRETE, BRIDGE	m3	150		
5	FURNISH/INSTALL DECK OVERLAY	m2	0		
5	JOINT SEAL ASSEMBLY	m	4		
6	BAR REINFORCING STEEL (BRIDGE)	kg	19,000		
7	MISCELLANEOUS METAL BRIDGE	kg	840		
8	SEPARATION RAILING	m	105		
9	BIKEWAY RAILING	m	105		
10	TRANSITION/ROADWAY	M	92		
Lighting					
	BIKEWAY LIGHTING	LS	1		
	BIKEWAY APURTENANCES	LS	1		

COMMENTS:

COST PER SQ. METER \$2,104

SUBTOTAL BRIDGE ITEMS	\$19,925,360
MOBILIZATION (@ 10%)	\$2,213,929
SUBTOTAL BRIDGE ITEMS	\$22,139,289
CONTINGENCIES (@ 25%)	\$5,534,822
BRIDGE TOTAL COST	\$27,674,111
GRAND TOTAL	\$27,674,111
FOR BUDGET PURPOSES - SAY	\$27,700,000

STRUCTURE: Oakland Bay
TYPE: Bikeway Addition
Two Side Lanes - Depressed from Roadway

RCVD BY: RAF
BR. No.: 34-0006
CU: 04
EA: 01200K

IN EST: _____
OUT EST: _____
DISTRICT: 04
RTE: 80
CO: ALA/SF
KP: _____

LENGTH: 3600.0 m
WIDTH: 6.0 m
AREA = 21600.0 m sq

NUMBER OF STRUCTURES IN PROJECT : _____ EST. NO. _____
PRICES BY : _____ COST INDEX: _____
QUANTITIES BY: _____ DATE: _____
QUANTITIES CHECKED BY: _____ DATE: _____

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Transition Structure 467.0 m					
1	CIDH PILES	m	1,140		
2	PRESTRESSING STEEL	173900 LS	1		
3	STRUCTURAL CONCRETE, BRIDGE	m3	2,000		
4	FURNISH/INSTALL DECK OVERLAY	m2	0		
5	JOINT SEAL ASSEMBLY	m	24		
6	BAR REINFORCING STEEL (BRIDGE)	kg	240,000		
7	MISCELLANEOUS METAL BRIDGE	kg	10,000		
8	SEPARATION RAILING	m	804		
9	BIKEWAY RAILING	m	804		
10	RAMP TRANSITION	m	65		
Mainspan & Cantilevers (Suspension w/Dual Towers) 625.0 m					
1	FURNISH/INSTALL DECK OVERLAY	m2	3,750		
2	JOINT SEAL ASSEMBLY	m	8		
2	FURNISH/ERECT STRUCTURAL STEEL	kg	468,000		
3	FURNISH/ERECT CABLE WIRE STEEL	kg	69,000		
4	CLEAN & PAINT STRUCTURAL STEEL	m2	9,000		
5	MISCELLANEOUS METAL BRIDGE	kg	12,960		
6	SEPARATION RAILING	m	1,260		
7	BIKEWAY RAILING	m	1,260		
Skyway (Assume Haunched Concrete Superstructure) 2400.0 m					
1	FURNISH PILES	m	1,200		
2	DRIVE PILES	EA	0		
3	PRESTRESSING, LONGITUDINAL	129,000 LS	1		
4	PRESTRESSING, TRANSVERSE	272460 LS	1		
5	STRUCTURAL CONCRETE, BRIDGE	m3	1,612		
6	STRUCTURAL CONCRETE, BRIDGE (Lightweight)	5310	6,800		
7	FURNISH/INSTALL DECK OVERLAY	m2	14,400		
8	BAR REINFORCING STEEL (BRIDGE)	kg	1,020,000		
9	JOINT SEAL ASSEMBLY	m	32		
10	MISCELLANEOUS METAL BRIDGE	kg	38,400		
11	SEPARATION RAILING	m	4,800		
12	BIKEWAY RAILING	m	4,800		
Oakland Plaza Structure 167.0 m					
1	FURNISH PILES	m	256		
2	DRIVE PILES	EA	16		
3	PRESTRESSING STEEL	44560 LS	1		
4	STRUCTURAL CONCRETE, BRIDGE	m3	300		
5	FURNISH/INSTALL DECK OVERLAY	m2	0		
5	JOINT SEAL ASSEMBLY	m	8		
6	BAR REINFORCING STEEL (BRIDGE)	kg	38,000		
7	MISCELLANEOUS METAL BRIDGE	kg	1,680		
8	SEPARATION RAILING	m	210		
9	BIKEWAY RAILING	m	210		
10	TRANSITION/ROADWAY	m	184		
Lighting					
	BIKEWAY LIGHTING	LS	1		
	BIKEWAY APURTENANCES	LS	1		

COMMENTS:

COST PER SQ. METER \$4,765

SUBTOTAL BRIDGE ITEMS \$45,131,920
MOBILIZATION (@ 10%) \$5,014,658
SUBTOTAL BRIDGE ITEMS \$50,146,578
CONTINGENCIES (@ 25%) \$12,536,644
BRIDGE TOTAL COST \$62,683,222
GRAND TOTAL \$62,683,222
FOR BUDGET PURPOSES - SAY \$62,700,000

STATE OF CALIFORNIA | DEPARTMENT OF TRANSPORTATION
MARGINAL ESTIMATE - MISCELLANEOUS STRUCTURES

STRUCTURE: San Francisco- Oakland Bay Bridge RCVD BY: RAF IN EST: _____
Bikeway Addition BR. No.: 34-0006 OUT EST: _____
 TYPE: Two Side Lanes - Level w/Roadway CU: 04 DISTRICT: 04
 EA: 01200K RTE: 80
 CO: ALA/SF
 KP: _____

LENGTH: 3600.0 m
 WIDTH: 6.0 m
 AREA = 21600.0 m sq

NUMBER OF STRUCTURES IN PROJECT :	EST. NO.
PRICES BY :	COST INDEX:
QUANTITIES BY :	DATE:
QUANTITIES CHECKED BY :	DATE:

CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
Transition Structure 467.0 m					
1	CIDH PILES	m	1,140		
2	PRESTRESSING STEEL	173900 LS	1		
3	STRUCTURAL CONCRETE, BRIDGE	m3	2,000		
4	FURNISH/INSTALL DECK OVERLAY	m2	0		
5	JOINT SEAL ASSEMBLY	m	24		
6	BAR REINFORCING STEEL (BRIDGE)	kg	240,000		
7	MISCELLANEOUS METAL BRIDGE	kg	10,000		
8	SEPARATION RAILING	m	804		
9	BIKEWAY RAILING	m	804		
10	RAMP TRANSITION	m	65		
Mainspan & Cantilevers (Suspension w/Dual Towers) 625.0 m					
1	FURNISH/INSTALL DECK OVERLAY	m2	3,750		
2	JOINT SEAL ASSEMBLY	m	8		
2	FURNISH/ERECT STRUCTURAL STEEL	kg	468,000		
3	FURNISH/ERECT CABLE WIRE STEEL	kg	69,000		
4	CLEAN & PAINT STRUCTURAL STEEL	m2	9,000		
5	MISCELLANEOUS METAL BRIDGE	kg	12,960		
6	SEPARATION RAILING	m	1,260		
7	BIKEWAY RAILING	m	1,260		
Skyway (Assume Haunched Concrete Superstructure) 2400.0 m					
1	FURNISH PILES	m	1,200		
2	DRIVE PILES	EA	0		
3	PRESTRESSING, LONGITUDINAL	129,000 LS	1		
4	PRESTRESSING, TRANSVERSE	272460 LS	1		
5	STRUCTURAL CONCRETE, BRIDGE	m3	1,612		
6	STRUCTURAL CONCRETE, BRIDGE (Lightweight)	5310	6,800		
7	FURNISH/INSTALL DECK OVERLAY	m2	14,400		
8	BAR REINFORCING STEEL (BRIDGE)	kg	1,020,000		
9	JOINT SEAL ASSEMBLY	m	32		
10	MISCELLANEOUS METAL BRIDGE	kg	38,400		
11	SEPARATION RAILING	m	4,800		
12	BIKEWAY RAILING	m	4,800		
Oakland Plaza Structure 167.0 m					
1	FURNISH PILES	m	256		
2	DRIVE PILES	EA	16		
3	PRESTRESSING STEEL	44560 LS	1		
4	STRUCTURAL CONCRETE, BRIDGE	m3	300		
5	FURNISH/INSTALL DECK OVERLAY	m2	0		
5	JOINT SEAL ASSEMBLY	m	8		
6	BAR REINFORCING STEEL (BRIDGE)	kg	38,000		
7	MISCELLANEOUS METAL BRIDGE	kg	1,680		
8	SEPARATION RAILING	m	210		
9	BIKEWAY RAILING	m	210		
10	TRANSITION/ROADWAY	m	184		
Lighting					
	BIKEWAY LIGHTING	LS	1		
	BIKEWAY APURTENANCES	LS	1		

COMMENTS:

COST PER SQ. METER \$4,191

SUBTOTAL BRIDGE ITEMS	\$39,693,880
MOBILIZATION (@ 10%)	\$4,410,431
SUBTOTAL BRIDGE ITEMS	\$44,104,311
CONTINGENCIES (@ 25%)	\$11,026,078
BRIDGE TOTAL COST	\$55,130,389
GRAND TOTAL	\$55,130,389
FOR BUDGET PURPOSES - SAY	\$55,100,000

Aesthetic Lighting Alternatives

AL-1 Aesthetic Lighting, Cable Stayed Main Span

AL-2 Aesthetic Lighting, Suspension Main Span

STATE OF CALIFORNIA | DEPARTMENT OF TRANSPORTATION
MARGINAL ESTIMATE - MISCELLANEOUS STRUCTURES

RCVD BY: RAF

IN EST: _____

OUT EST: _____

STRUCTURE: AESTHETIC LIGHTING

BR. No.: 34-0006

DISTRICT: _____

TYPE: SUSPENSION ALTERNATIVE

CU: 04

RTE: _____

EA: 01200K

CO: _____

KP: _____

LENGTH: 4200.0 m

WIDTH: 100.0 m

AREA = 420000.0 m sq

NUMBER OF STRUCTURES IN PROJECT: _____

EST. NO. _____

PRICES BY: _____

COST INDEX: _____

QUANTITIES BY: _____

DATE: _____

QUANTITIES CHECKED BY: _____

DATE: _____

SUSPENSION ALTERNATIVE - TWIN TOWERS

CONTRACT ITEMS		TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	Mainspan Lighting - Furnish		LS	1		
2	Mainspan Lighting - Install		LS	1		
3	Skyway Lighting - Furnish		LS	1		
4	Skyway Lighting - Install		LS	1		
5	Electrical		LS	1		
SUBTOTAL						\$26,618,000
MOBILIZATION (@ 10%)						\$2,957,556
SUBTOTAL BRIDGE ITEMS						\$29,575,556
CONTINGENCIES (@ 25%)						\$7,393,889
BRIDGE TOTAL COST						\$36,969,444
Less Standard Safety Lighting & Elect						-\$15,200,000
GRAND TOTAL						\$21,769,444
FOR BUDGET PURPOSES - SAY						\$21,800,000

COMMENTS: _____

COST PER SQ. METER \$88

SUSPENSION ALTERNATIVE - SINGLE TOWERS

CONTRACT ITEMS		TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	Mainspan Lighting - Furnish		LS	1		
2	Mainspan Lighting - Install		LS	1		
3	Skyway Lighting - Furnish		LS	1		
4	Skyway Lighting - Install		LS	1		
5	Electrical		LS	1		
SUBTOTAL						\$26,618,000
MOBILIZATION (@ 10%)						\$2,957,556
SUBTOTAL BRIDGE ITEMS						\$29,575,556
CONTINGENCIES (@ 25%)						\$7,393,889
BRIDGE TOTAL COST						\$36,969,444
Less Standard Safety Lighting & Elect						-\$15,200,000
GRAND TOTAL						\$21,769,444
FOR BUDGET PURPOSES - SAY						\$21,800,000

COMMENTS: _____

COST PER SQ. METER \$88

MARGINAL ESTIMATE - MISCELLANEOUS STRUCTURES

RCVD BY: RAF

IN EST: _____

OUT EST: _____

STRUCTURE: AESTHETIC LIGHTING

BR. No.: _____

DISTRICT: _____

TYPE: CABLE-STAYED ALTERNATIVECU: 04

RTE: _____

EA: 01200K

CO: _____

KP: _____

LENGTH: 4200.0 mWIDTH: 100.0 mAREA = 420000.0 m sq

NUMBER OF STRUCTURES IN PROJECT: _____

EST. NO. _____

PRICES BY: _____

COST INDEX: _____

QUANTITIES BY: _____

DATE: _____

QUANTITIES CHECKED BY: _____

DATE: _____

CABLE-STAYED ALTERNATIVE - TWIN TOWERS

CONTRACT ITEMS		TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	Mainspan Lighting - Furnish		LS	1		
2	Mainspan Lighting - Install		LS	1		
3	Skyway Lighting - Furnish		LS	1		
4	Skyway Lighting - Install		LS	1		
5	Electrical		LS	1		

COMMENTS: _____

SUBTOTAL \$21,212,000

MOBILIZATION (@ 10%) \$2,356,889

SUBTOTAL BRIDGE ITEMS \$23,568,889

CONTINGENCIES (@ 25%) \$5,892,222

BRIDGE TOTAL COST \$29,461,111

Less Standard Safety Lighting -\$15,200,000

GRAND TOTAL \$14,261,111

FOR BUDGET PURPOSES - SAY \$14,300,000

COST PER SQ. METER

\$70

CABLE-STAYED ALTERNATIVE - SINGLE TOWER

CONTRACT ITEMS		TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	Mainspan Lighting - Furnish		LS	1		
2	Mainspan Lighting - Install		LS	1		
3	Skyway Lighting - Furnish		LS	1		
4	Skyway Lighting - Install		LS	1		
5	Electrical		LS	1		

COMMENTS: _____

SUBTOTAL \$20,957,000

MOBILIZATION (@ 10%) \$2,328,556

SUBTOTAL BRIDGE ITEMS \$23,285,556

CONTINGENCIES (@ 25%) \$5,821,389

BRIDGE TOTAL COST \$29,106,944

Less Standard Safety Lighting -\$15,200,000

GRAND TOTAL \$13,906,944

FOR BUDGET PURPOSES - SAY \$13,900,000

COST PER SQ. METER

\$69

Demolition

F-1,2,3

Demo less Demo Included in Viaduct Modifications

SUMMARY OF COST ESTIMATE FOR BRIDGE DEMOLITION

NOTE DEMO = 14 months

Bridge Portion	Superstructure Demolition						Substructure Demolition									TOTAL COST (\$ million)				
	Concrete Deck			Steel Truss			Steel Portal			Concrete above Water			Concrete below Water							
	Quantity	Unit Price	Cost	Quantity	Unit Price	Cost	Quantity	Unit Price	Cost	Quantity	Unit Price	Cost	Quantity	Unit Price	Cost					
	(CY)	(\$ / CY)	(\$1,000)	(kips)	(\$ / kips)	(\$1,000)	(kips)	(\$ / kips)	(\$1,000)	(CY)	(\$ / CY)	(\$1,000)	(CY)	(\$ / CY)	(\$1,000)					
Bent48 - YB1	3631			0			0			1957			0			0.598				
YB1 - E1	3264			7996			1449			4875			0			2.819				
E1 - E4	5398			40500			4513			22151			16699			18.724				
E4 - E9	5700			23005			4774			5369			6682			9.745				
E9 - E23	9100			28378			2092			7838			5895			9.802				
E23 - E39	3395			2005			56			10197			368			1.588				
Detour	185,000 SF x \$14.00 / SF															2.600				
Total (\$ million)			4.290				23.472				1.522				5.171				8.820	45.875
															Contingency 25%		11.469			
															Total cost (\$ million)		57.343			

Life Cycle Costs

All Alternatives

1

BAY BRIDGE REPLACEMENT **COMPARATIVE LIFE CYCLE COST ANALYSIS - PRIMARY DESIGN ALTERNATIVES**

True Cost of Capital = 1.0775/1.03 = 1.0461

		STRUCTURE WITH CABLE-STAYED MAIN SPANS (MAIN SPANS 215m & 275m)						STRUCTURE WITH SUSPENSION MAIN SPANS (MAIN SPANS 215m & 275m)					
		DUAL CONCRETE TOWERS			SINGLE CONCRETE TOWER			DUAL STEEL TOWERS			SINGLE STEEL TOWER		
		Haunched Concrete	Uniform Depth Concrete	Uniform Depth Steel	Haunched Concrete	Uniform Depth Concrete	Uniform Depth Steel	Haunched Concrete	Uniform Depth Concrete	Uniform Depth Steel	Haunched Concrete	Uniform Depth Concrete	Uniform Depth Steel
COST ITEM	FREQUENCY (YEARS)	\$ (x1000) Normalized to year 2002			\$ (x1000) Normalized to year 2002			\$ (x1000) Normalized to year 2002			\$ (x1000) Normalized to year 2002		
A. INSPECTION													
A.1. SUPERSTRUCTURE	1												
A.2. SUBSTRUCTURE	2												
B. MAINTENANCE, BY STATE CREWS													
B.1. PAINT STEEL	20												
B.2. SUBSTRUCTURE	1												
B.3. SUPERSTRUCTURE	1												
B.4. EXPANSION JOINTS	5												
B.5. SURFACING	1												
B.6. SEALING/INJECT CONC.	15												
C. MAINTENANCE, CONTRACTED													
C.1. CABLE BAND BOLTS -TIGHTEN	30												
C.2. EXPANSION JOINTS - REPLACE	30												
C.3. SURFACING - REPLACE (both PolyEth. & Epoxy Asph.)	30												
C.4. HANGERS - REPLACE	60												
C.5. CABLE-STAYS - REPLACE	60												
C.6. CONCRETE - SEAL / EPOXY INJECT	20												
D. TRAFFIC DELAY COST													
D.1. CONTRACT WORK													
TOTAL, COMPARATIVE LIFE CYCLE COSTS (K\$)		13,900	14,073	18,232	13,888	14,061	18,247	12,229	12,402	16,561	11,534	11,707	15,866

**LIFE-CYCLE COST ANALYSIS - BAY BRIDGE
INCREASE SUSPENSION MAIN SPAN TO 215m & 350m**

		CABLE STAYED MAIN SPAN						SUSPENSION MAIN SPAN					
		DUAL PORTAL			SINGLE PYLON			DUAL PORTAL			SINGLE PYLON		
		Hrch Conc	Unif. Conc	Steel	Hrch Conc	Unif. Conc	Steel	Hrch Conc	Unif. Conc	Steel	Hrch Conc	Unif. Conc	Steel
COST ITEM	FREQ,yr	2002 \$ (X1000)			2002 \$ (X1000)			2002 \$ (X1000)			2002 \$ (X1000)		
A. INSPECTION													
A.1 SUPER	1												
A.2 SUB	2												
B. MAINT., STATE CREWS													
B.1 PAINT	20												
B.2 SUB.	1												
B.3 SUPER.	1												
B.4 EXP. JTS.	5												
B.5 SURF.	1												
B.6 CONCRETE SEAL/INJ.	20												
C. MAINT., CONTRACTS													
C.1 CABLE BANDS	30												
C.2 EXP. JTS.	30												
C.3 SURF.	30												
C.4 HANGERS	60												
C.5 STAYS	60												
C.6 CONC. SEAL/INJ.	20												
D. TRAFFIC													
D.1 CONTRACT													
TOTAL		0	0	0	0	0	0	274	207	247	187	120	159

USING: Capital Cost = $1.0775/1.03 = 1.0461$

COMPARATIVE LIFE CYCLE COST ANALYSIS
BASELINE - Haunched Conc. Skyway FULL LENGTH

True Cost of Capital = $1.0775/1.03 = 1.0461$

(2002 \$)

COST ITEM	FREQ, yr.	\$ (x1000)
A. INSPECTION		
A.1 SUPERSTRUCTURE	1	
A.2 SUBSTRUCTURE	2	
B. MAINT. STATE CREWS		
B.1 PAINT	20	
B.2 SUBSTRUCTURE	1	
B.3 SUPERSTRUCTURE	1	
B.4 EXPANSION JOINTS	5	
B.5 SURFACING	1	
B.6 CONCRETE SEAL/INJECTION	20	
C. MAINT. CONTRACT		
C.1 CABLE BANDS	30	
C.2 EXPANSION JOINTS	30	
C.3 SURFACING	30	
C.4 HANGERS	60	
C.5 STAYS	60	
C.6 CONCRETE SEAL/INJECTION	30	
D. TRAFFIC		
D.1 CONTRACT		
TOTAL COMPARATIVE LCC, yr 2002 \$ (x1000)		11,201.9
E. POST-E/Q REPAIR COSTS		
E.1 STRUCTURAL CONCRETE		
E.2 STRUCTURAL STEEL		
E.3 DECK SURFACE		
E.4 EXPANSION JOINTS/SEALS		
E.5 BEARINGS		
E.6 LANE CLOSURE COSTS		
TOTAL POST-E/Q RPR COST, yr 2002 \$ (x1000)		20,133.7

BAY BRIDGE REPLACEMENT
COMPARATIVE LIFE CYCLE COST ANALYSIS
POST-EARTHQUAKE REPAIR COSTS & INCREMENTAL LIFE CYCLE COSTS

		STRUCTURE WITH CABLE-STAYED MAIN SPANS (MAIN SPANS 215m & 275m)						STRUCTURE WITH SUSPENSION MAIN SPANS (MAIN SPANS 215m & 275m)					
		DUAL CONCRETE TOWERS			SINGLE CONCRETE TOWER			DUAL STEEL TOWERS			SINGLE STEEL TOWER		
		Haunched Concrete	Uniform Depth Concrete	Uniform Depth Steel	Haunched Concrete	Uniform Depth Concrete	Uniform Depth Steel	Haunched Concrete	Uniform Depth Concrete	Uniform Depth Steel	Haunched Concrete	Uniform Depth Concrete	Uniform Depth Steel
		\$ (x1000)			\$ (x1000)			\$ (x1000)			\$ (x1000)		
COST ITEM		FREQUENCY (YEARS)											
E. POST-EARTHQUAKE REPAIRS *													
E.1. STRUCTURAL CONC. REPAIR (R&R)	N/A												
E.2. STRUCTURAL STEEL REPAIR (R&R)	N/A												
E.3. DECK SURFACE (CONCRETE; STEEL)	N/A												
E.4. EXPANSION JTS AND JT SEAL ASS'YS	N/A												
E.5. BEARINGS (SPH. EXPANS.; ELAST.)	N/A												
E.6. LANE CLOSURE COSTS	N/A												
Total Costs (\$1998)		22,740	21,970	25,588	23,432	22,662	26,260	22,848	22,078	25,678	24,636	23,868	27,464
Escalation to \$2002, at 3%/yr		2,854	2,757	3,209	2,941	2,844	3,296	2,868	2,771	3,223	3,092	2,995	3,447
TOTAL ESCALATED COSTS FOR POST-EARTHQUAKE REPAIRS * (YR 2002; x \$1000)		25,594	24,727	28,797	26,373	25,506	29,556	25,716	24,849	28,899	27,728	26,861	30,911
* Based on current costs to repair anticipated damage due to maximum credible EQ. (EQ event / Repairs not assumed at any particular future point and *present worth'ed.)													
INCREMENTAL LIFE CYCLE COST TO INCREASE SUSPENSION MAINSPAN LENGTH **													
A.1. SUPERSTRUCTURE	1	N/A											
A.2. SUBSTRUCTURE	2												
B.1. PAINT STEEL	20												
B.3. SUPERSTRUCTURE	1												
B.5. SURFACING	1												
B.6. SEALING/INJECT CONC.	15												
C.1. CABLE BAND BOLTS -TIGHTEN	30												
C.3. SURFACING - REPLACE (both PolyEth. & Epoxy Asph.)	30												
C.4. HANGERS - REPLACE	60												
C.6. CONCRETE - SEAL / EPOXY INJECT	20												
D.1. TRAFFIC DELAY COST	N/A												
TOTAL ADDED LIFE CYCLE COSTS To Increase Main Span Lengths (K\$)		0	0	0	0	0	0	274	207	247	187	120	159
** Increase Suspension Main Spans to 215m & 350m. Cost items listed are numbered as per Primary Design Alternatives spread sheet. Only Cost Items differing from the values listed on the Primary Design Alternatives spread sheet are included in this incremental cost section.								(Year 2002) \$, x 1000 True Cost of Capital = 1.0775/1.03 = 1.0461					